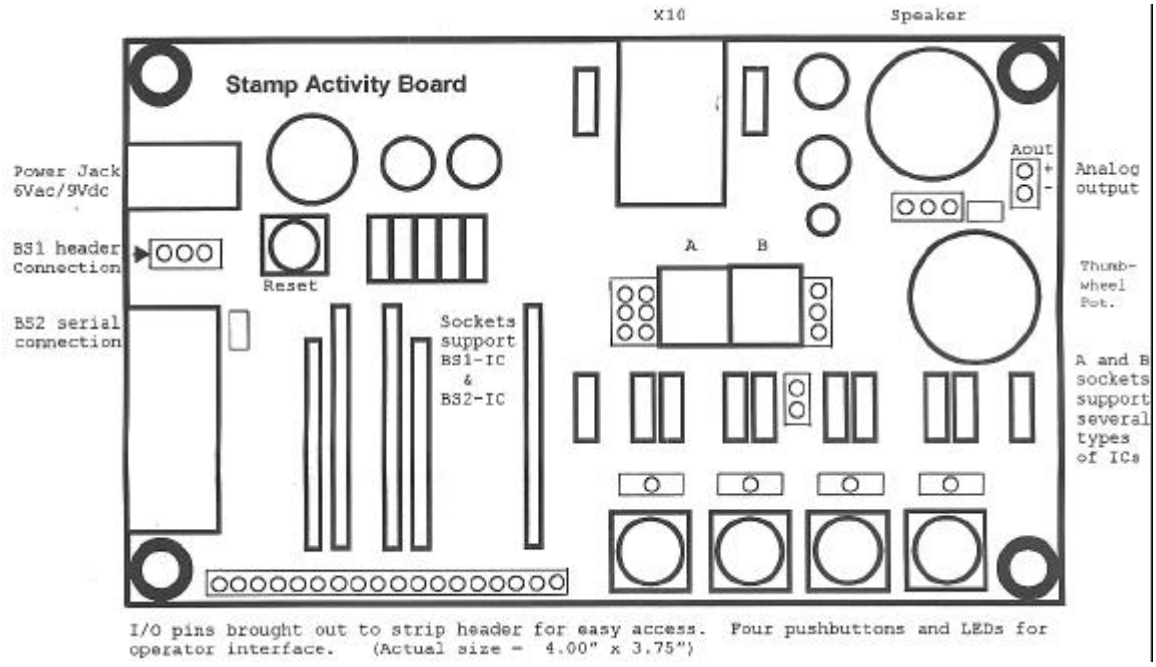
BASIC Stamp® Activity Board:

Features and Specifications

The BASIC Stamp Activity Board (BSAC) is a demonstration board for Parallax BASIC Stamp computers (BS1-IC and BS2-IC modules), and with the optional expansion socket, PIC microcontrollers. This documentation explains BSAC features and provides sample source code for the BASIC Stamp I and II. Sample source code is included on the enclosed diskette.



Features

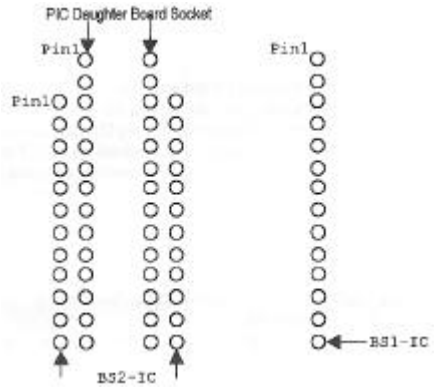
- Four pushbuttons let you stimulate inputs
- Four LEDs indicate the status of the outputs
- 32 Ohm Speaker outputs frequencies: 500-8K Hz
- Potentiometer gives you an analog input
- RC network changes PWM into a smooth analog output
- A/B sockets support many 8 pin DIP ICs including: eeproms, ADCs, digital thermometers, etc.
- X-10 interface via RJ-11 connection
- Strip header for easy I/O access
- Current limit resistors make the board forgiving of 'engineering mistakes'
- Reset pushbutton allows you to easily reset the Basic Stamp
- Large holes in the distal comers allow easy mounting
- Supports both BS1-IC and BS2-IC
- Supports 18 and 28 pin PIC devices with optional daughter board

Power Supply

Power required is 6-12 VAC or 9-24 VDC @ 100mA. The voltages noted on the printed circuit board are lower to accommodate certain regulators used on early models of BASIC Stamps. If your BASIC Stamp regulator has the letters, "KD", printed on it, use the lower voltages specified on the printed circuit board. Stamps bearing regulators printed with the number, "LM293", can use the higher input voltages specified above. The green LED should light when power is applied. We have included a 9VDC wall-pack power supply that is suitable.

BASIC Stamp Modules

The BSAC board allows you to use either the BS1-IC or BS2-IC modules, but you cannot use both at the same time. You must never plug in both BS1-IC and the BS2-IC at the same time. The +V pins and the +5 pins are tied together. Running both stamps would parallel the regulators, perhaps causing irreversible damage that would require repair. The drawing below shows how and where to plug your Stamp into the Stamp Activity Board.

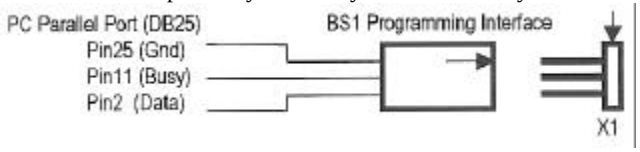


Reset Switch

The reset pushbutton is common to both BASIC Stamps. Each BASIC Stamp has its own brown-out-reset circuit that pulls the reset line high. Pushing the reset pushbutton pulls the RST pin of the BASIC Stamp to ground, thereby resetting the stamp.

BS1-IC Programming Interface

The BS1-IC programming interface is a three-pin, in-line connection (X1). When connecting the BS1 Programming Cable, (provided in either the BS1-Starter Kit, or the Stamp Programming Package), line up the arrow found on the side of the cable with the hash marks found on the Stamp Activity Board. If you wish to make your own cable, follow the diagram below.



BS2-IC Programming Interface

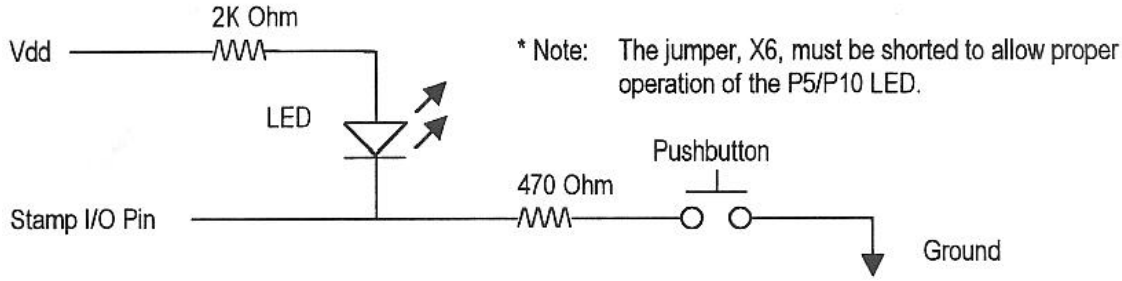
The BS2-IC programming interface is DB9 (RS-232) serial connection. Simply connect the BS2 Programming Cable, (provide in either the BS2 Starter Kit, or the Stamp Programming Package), to the DB9 serial connector provided on the Stamp Activity Board. If you do not have this cable, any DB9-DB9 'straight-through' modem cable will do.

I/O Pins

Most of the I/O Pins are 'pre-wired' to dedicated peripherals on the board. All I/O Pins connect directly to a male strip header located near the bottom of the board to provide I/O pin access. Use caution when connecting peripherals to this strip header as there are no 'safety resistors' used. Short circuits and I/O Pin conflicts can result in damage to the Stamp and/or the Stamp Activity Board.

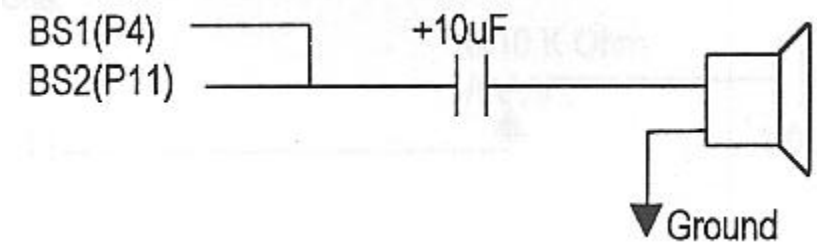
Pushbuttons & LEDs

Four push buttons are provided to stimulate the input pins of the Stamp. Four LEDs indicate the status of the I/O pins and connect to the same I/O pins as the four pushbuttons. Above each LED/Pushbutton combination there is a legend that shows which I/O pin it is connected to. There are two pin numbers for each LED/Pushbutton. The first number is the BS1-IC pin number and the second is for the BS2-IC pin number. The diagram below shows how the pushbuttons and LEDs are typically connected.



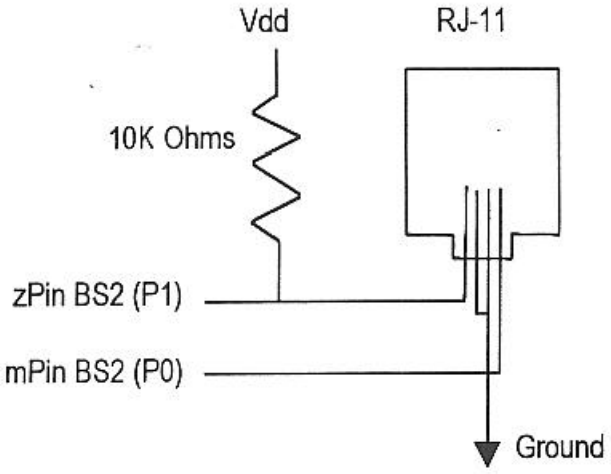
The Speaker

A 32 Ohm speaker is coupled through a 10uF capacitor so that it may be used by either BS1-IC (P4) or BS2-IC (P11). The drawing below depicts the connections.



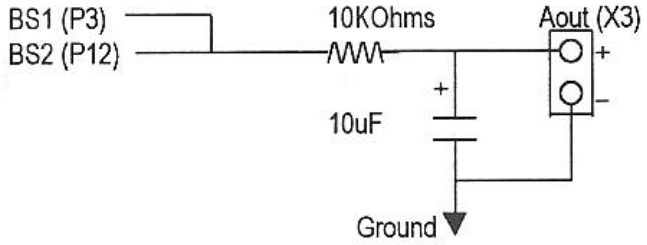
X-10 Interface

The RJ-11 connector is pre-wired to interface directly to a Powerhouse TW-523 Powerline interface. Since only the BS2-IC offers the XOUT function, this peripheral is wired only to the BS2-IC pins. The diagram below shows the connections.



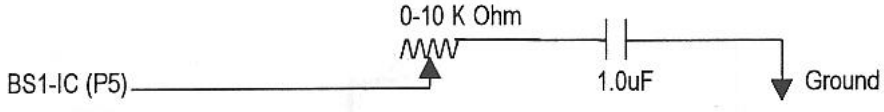
Analog Output

Though neither BASIC Stamp offers an analog output function, both offer the PWM function. If an RC network filters the PWM output, a smooth analog output results. The diagram below shows the connections.



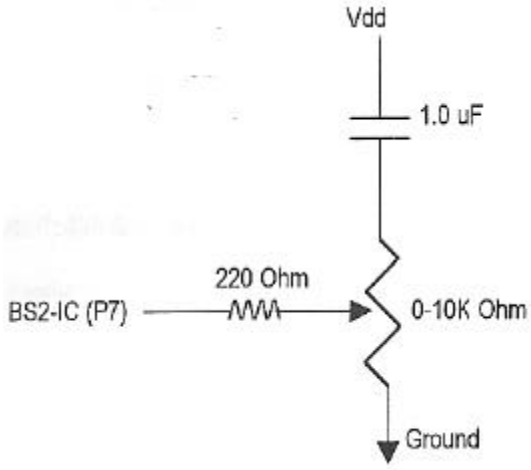
The Potentiometer (BS1-IC)

The POT command allows the BS1-IC to read a variable resistance in series with a known capacitance. Position the X2 jumper to the "1" position. Remove the X6 jumper when reading the potentiometer. The diagram below shows the connections.



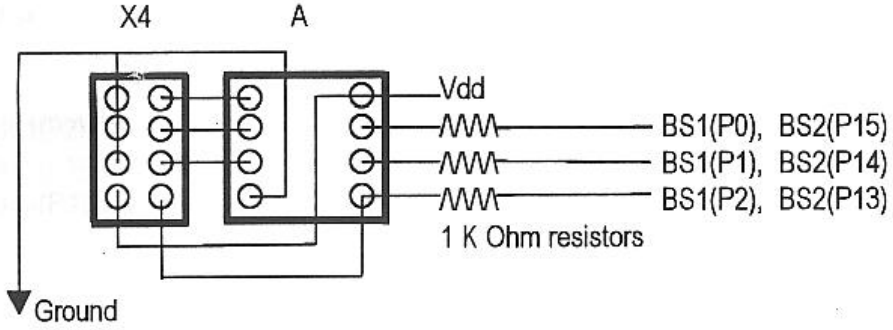
The Potentiometer (BS2-IC)

The RCTIME command allows the BS2-IC to read a variable resistance in series with a known capacitance. Position the X2 jumper to the "2" position. The diagram below shows the connections.



Socket 'A'

Socket 'A' is an 8-pin DIP socket designed to accommodate a variety of parts. Please note the diagram below depicting Socket A and jumper block X4.

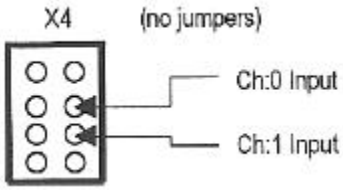


24C65 Eeprom

Socket 'A' supports the 24C65 eeprom. Position the jumpers in the X4 jumper block as shown:

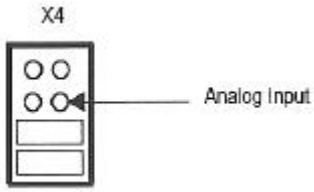
LTC1298 A/D Converter

Socket 'A' supports the LTC-1298 A/D Converter. Position the jumpers in the X4 jumper block as shown:



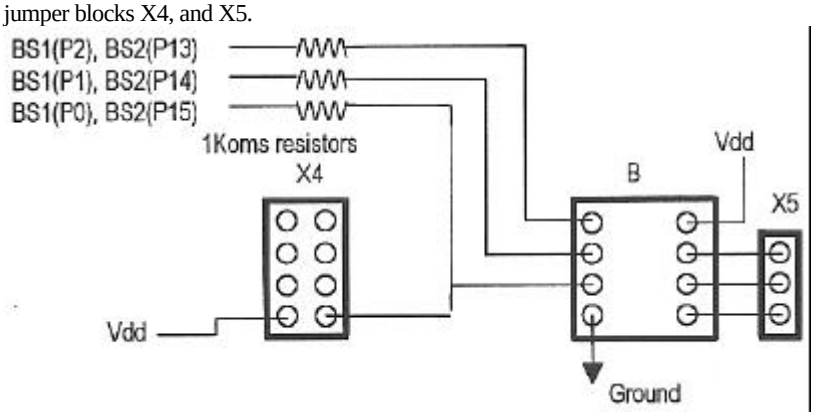
ADC0831 A/D Converter

Socket 'A' supports the ADC-0831 A/D Converter. Position the jumpers in the X4 jumper block as shown:



Socket 'B'

Socket 'B' is an 8-pin DIP socket designed to accommodate a variety of parts. Please note the diagram below depicting Socket B and jumper blocks X4, and X5.



DS1620 Digital Thermometer

Socket 'B' supports the DS-1620 Digital Thermometer/Thermostat. Position the jumpers on the X4 jumper block as hown below. Please note the outputs available on strip header X5.

Legend of Stamp I/O Pin Connections

BS2-IC Pin	BS1-IC Pin	Connected To:
P15	P0	Socket A, pin 7 Socket B, pin 1 Note: Connected via a 1 KOhm Isolation resistor
P14	P1	Socket A, pin 6 Socket B, pin 2 Note: Connected via a 1 KOhm Isolation resistor
P13	P2	Socket A, pin 5 Socket B, pin 3 Note: Connected via a 1 KOhm Isolation resistor 10 K Ohm pull up resistor (to +5 Vdc) X4 (can be hard jumpered to +5 Vdc)
P12	P3	Socket A, pin 1 (via a 1 KOhm resistor) Note: Socket A, pin 1 can be grounded via the X4 jumper. RC filter for Analog Output (X3)
P11	P4	P4/P11 Pushbutton/LED circuit The speaker
P10	P5	P5/P10 Pushbutton/LED circuit The potentiometer RC network Note: The jumper on X6 must be Removed for proper operation of the 'Pot' function
P9	P6	P6/P9 Pushbutton/LED circuit
P8	P7	P7/P8 Pushbutton/LED circuit
P7		The potentiomer RC network
P6 through P2		No connections
P1		Pin 1 of the RJ-11 connector (for X-10) Note: This line is pulled to +5 Vdc via a 10 KOhm resistor
P0		Pin 4 of the RJ-11 connector (for X-10)